

ABSTRACT OF THE DISCLOSURE

Structures, materials and methods for resolving forward implantation skew in the transposed splitting of ion cut materials. By way of example a "material X" is described, such as in the form of a wafer or substrate, having a low resistivity device layer within which nanodevices can be fabricated, an insulation layer, a hydrogen getter layer (e.g., heavily doped region), and a diffusion layer. Devices fabricated in the device layer can be transferred by bonding the surface of the device layer to a target material and then injecting and diffusing hydrogen from the backside of material X through the diffusion layer to the hydrogen getter layer to form a weakened plane. A splitting process then separates the device layer from the remainder of the substrate. A method is also described for thermally isolating a device layer stack, or other target, from a heated diffusion layer when diffusing hydrogen to form the weakened plane.